EXTENSION OF FAST PHONG SHADING TECHNIQUE FOR BUMP MAPPING

Abstract of the Disclosure

A method for implementing bump mapping is provided that is fast enough to be used with real time interactive graphics products. Computationally expensive color values are precalculated for a sample of normal vector orientations as a function of orientation-dependent color variables, collected in a color map, and referenced through the color variables. The color variables are linearly related to angle coordinates that specify the normal vector orientations in a selected coordinate system. Angle coordinates are determined for the vertices of the polygons representing the object to be imaged. During rendering, the vertex angle coordinates are interpolated to provide pixel angle coordinates. Modified angle coordinates are generated by combining the angle coordinates with angle perturbations provided by a perturbation source, and converted to color variables. Color values referenced by the color variables are assigned to the corresponding pixels.

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